Check List 8(2): 310-312, 2012
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ISSN 1809-127X (available at *www.checklist.org.br*)

Check List
Journal of species lists and distribution

NOTES ON GEOGRAPHIC DISTRIBUTION

Reptilia, Squamata, Viperidae, *Bothrops venezuelensis* Leybold, 1873: Distribution extension and first country record

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ABSTRACT: We report on the presence of *Bothrops venezuelensis* Leybold, 1873 in Norte de Santander and Boyacá departments, Colombia. These findings represent the first records for the country. Extending the species' distribution 474 km in a straight-line distance SW from its nearest previously known Venezuelan locality. The present record adds a new clinically important species for Colombia, which needs to be considered in the production of anti-ophidic serum.

The family Viperidae is represented by 17 species in the Colombian territory, four of them belonging to the genus *Bothrops* (*sensu stricto*). The four species include: *Bothrops asper* Garman, 1884, *Bothrops atrox* Linnaeus, 1758, *Bothrops brazili* Hoge, 1954, and *Bothrops punctatus* Garcia, 1896 (Campbell and Lamar 2004; Fenwick 2009). It has been estimated that the genus *Bothrops* causes 94.64% of poisonous snakebites in Colombia for they are considered clinically important species (Charry 2007). Because of this, it is important to have an accurate knowledge of the distribution of pit vipers, to correctly assess the species venom pool to be included in the production of polyvalent anti-crotalic serum applied in Colombia (Otero 1994, Charry 2007).

Confirmed records for seven viper species have been made previously for the department of Norte de Santander and Boyacá: (*Bothriechis schlegelii* Berthold, 1846, *Bothrocophias microphthalmus* Cope, 1876, *Porthidium lansbergii* Schlegel, 1841, *Porthidium nasutum* Bocourt, 1868, *Lachesis acrochorda* García, 1896, *B. asper*, and *B. atrox*) (Sanchez *et al.* 1995; Campbell and Lamar 2004; Barrientos *et al*. 2011).

The distribution of *Bothrops venezuelensis* was previously known from northern and central Venezuela, in the central range of the Cordillera de la Costa including the states of Carabobo, Aragua, Distrito Federal, Miranda, Lara, Trujillo and Merida (Esqueda *et al.* 1999; Lamarca *et al.* 2004; Campbell and Lamar 2004). In this note we present the first record of *B. venezuelensis* in Colombia, extending its geographic distribution southwestward in relation to its currently recognized distribution.

Bothrops venezuelensis is characterized by having the following combination of characters: intersupraoculars 8–14; supralabials 6–9, the second usually fused with the prelacunal; infralabials 9–13; midbody dorsal scale rows 23–25; ventral scales counted along the body 179–219; and subcaudal scales along the tail 48–73, the subcaudal scales are divided into two rows. Furthermore, this species may also present a wide array of color morphs in nature. Individuals may have a yellowish, brown, gray or olive ground color (Campbell and Lamar 2004).

The species can be distinguished from other sympatric species of pit vipers by: 1) a rounded snout; 2) a wide post orbital stripe with pale edges usually in contact with the sixth supralabial or the posteriormost infralabials; and 3) a venter that is white or yellowish in color, and heavily pigmented with black at the juncture of the first dorsal row. The canthal region and labials have a series of dots that make them different from the uniform yellow color pattern found in *B. asper* (Campbell and Lamar 2004; Peters *et al.* 1970). Juveniles of *B. venezuelensis* possess a reddish pink tail tip markedly different from tail tips found in other local viper species (W. Wüster, *pers. comm*.).

On 24 September 2009, a female specimen of *Bothrops venezuelensis* (snout–vent length 350 mm) was photographed at Tamá National Park protected area. The specimen was located at the County of California between the municipalities of Gibraltar and Cubará, department of Norte de Santander. (07°05'34.9" N, 72°08'14.6" W; 718 m elevation; Figure 1). The specimen of *Bothrops venezuelensis* was observed in a mountain forest characterized by a 15 m closed canopy, rich epiphytic vegetation and a diverse, understory stratum, also presenting high leaf litter accumulation. The specimen was observed alive and was later killed by a local peasant in the same place where it was previously photographed. Three years later, on 11 December 2011, an adult *B. venezuelensis* was photographed at the Municipality of Santa María, department of Boyacá. The specimen was found along a small stream known by the name of "La Cristalina," which is characterized by the presence of riparian Andean forests. (04°51'57.2" N, 77°16'31.9" W; 774 m elevation). A year later, on 3 March 2012 a neonate female *B. venezuelensis* was collected by biologist Mateo Fernandez Lucero in the municipality of Santa María, Department of Boyacá. The specimen was deposited in the herpetological collection

of the Museo de Historia Natural ANDES, Universidad de los Andes, Bogotá, Colombia. Under the catalog number (ANDES R-0216; Figure 2). This individual has a total length of 310 mm and a tail length of 37 mm; presents a dorsal scale reduction of 24 scales over the cervical region; 25 dorsal scales at mid body and 20 scales at the position of one head length anterior to the anus; 198 ventral scales and 55 subcaudal scales; nine infralabials and eight supralabials, the second supralabial is fused with the prelacunal scale. This specimen was captured at 9:30h coiled over leaf litter in a very humid riparian forest. (124°51'35" N, 73°15'48.8" W; 950 m elevation).

Colombian national parks have serious restrictions for the extraction of any kind of biological material from protected areas, which is why this specimen found within the Tamá National Park protected area could not be collected. Two photographs of the specimen found in Parque Nacional Tamá, were deposited in the Milwaukee Public Museum Photographic Voucher Collection (MPM herpetology catalogue numbers P759 and P760; Figure 3). Additionally three photographs of the specimen found in Boyacá in 2011, were also deposited in the Milwaukee Museum Photographic Voucher Collection (MPM herpetology catalogue numbers P763, P764, and P765; Figures 4 and 5). The specimen photographs were sent to Drs. Wolfgang Wüster and Enrique La Marca, who aided in the identification of the species. Tamá National Park is a binational protected area located in Colombia´s northeastern frontier with Venezuela. The park and its buffer areas hold Andean and sub-Andean biomes, mainly dominated by low mountain cloud forests and Andean rain forests (Morales *et al.* 2007). Santa María, Boyacá has a similar forest structure and altitude as the place where *B. venezuelensis* was registered in the department of Norte de Santander. All individulas were observed active during the daytime on the forest floor.

These observations represent the first records of *B. venezuelensis* for Colombia, extending the species range 474 km in a straight-line distance SW from the nearest Venezuelan locality (Merida; Lamarca *et al.* 2004). The specimen found at Tamá National Park was located 202 Km in a straight-line distance SW from the locality of Merida, Venezuela. Colombian collections lack specimens of *B. venezuelensis* suggesting that localities where they may be found have not been totally surveyed on account of political conflict in the surrounding areas of this international border. We also consider that misidentification can also be the cause that explains why this species has not been previously reported. The present record shows that this species has a gap in its currently recognized distribution, and perhaps its range has been underestimated.

This observation adds to the record of a clinically important species for Colombia. It is essential to include these records of poisonous snakes that inhabit the region to allow for the application of more efficient snakebite treatment plans and resources.

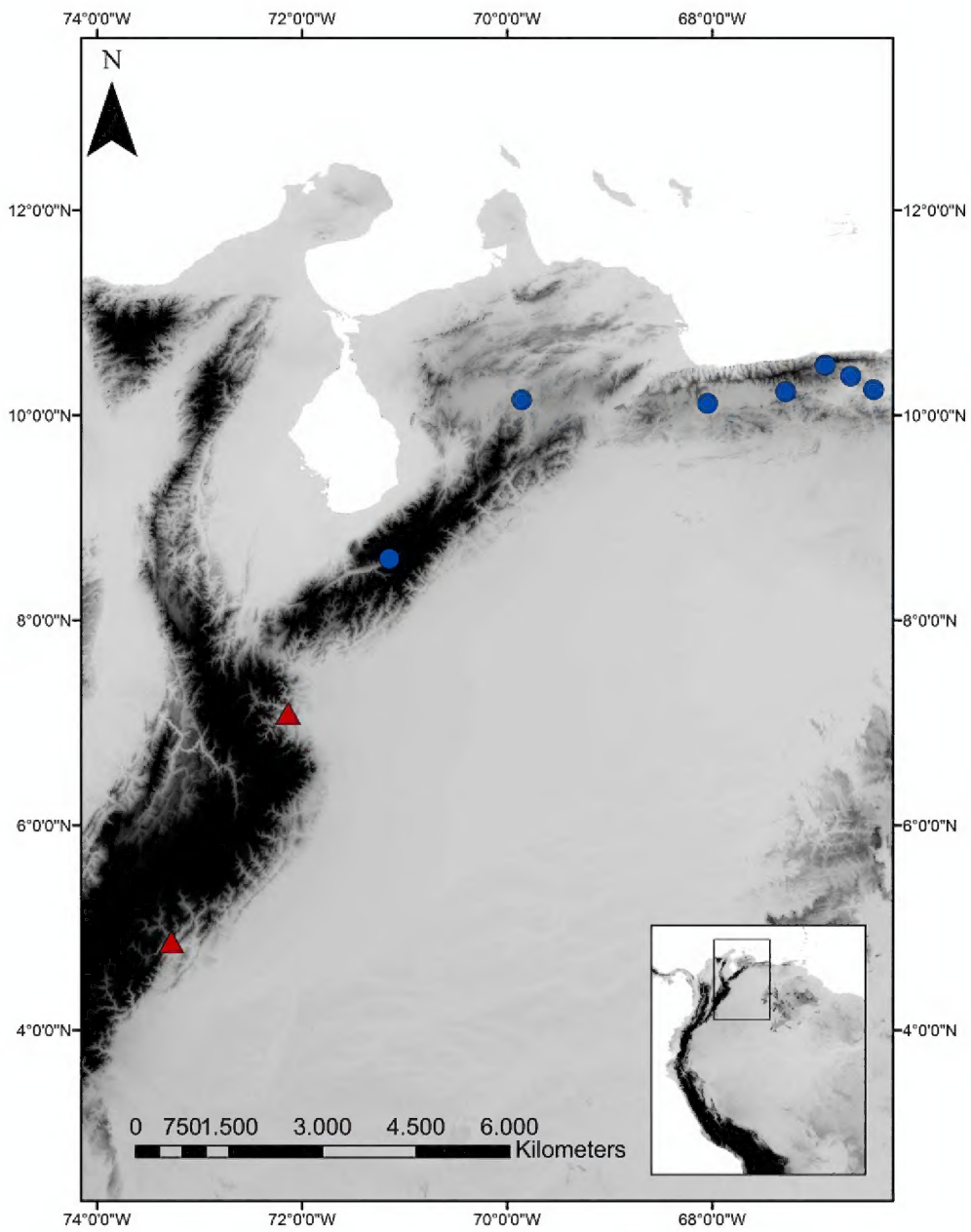

Figure 1. Distribution of *Bothrops venezuelensis*. The blue spots indicate previous published records for the species in Venezuela. The red triangles indicate the localities where the specimens were found at Tamá National Park, Norte de Santander, and Santa María, Boyacá, Colombia.

Figure 2. *Bothrops venezuelensis* (ANDES-R 0216). Voucher collected at Santa Maria, Boyaca. Photograph taken by JSM.

Figure 3. *Bothrops venezuelensis* (Female, MPM P759) found on a small forest trail in Tamá National Park Jurisdiction. Photograph taken by VB.

Figure 4. *Bothrops venezuelensis* (MPM P764). Found at Santa María, Boyacá Photograph taken by DG.

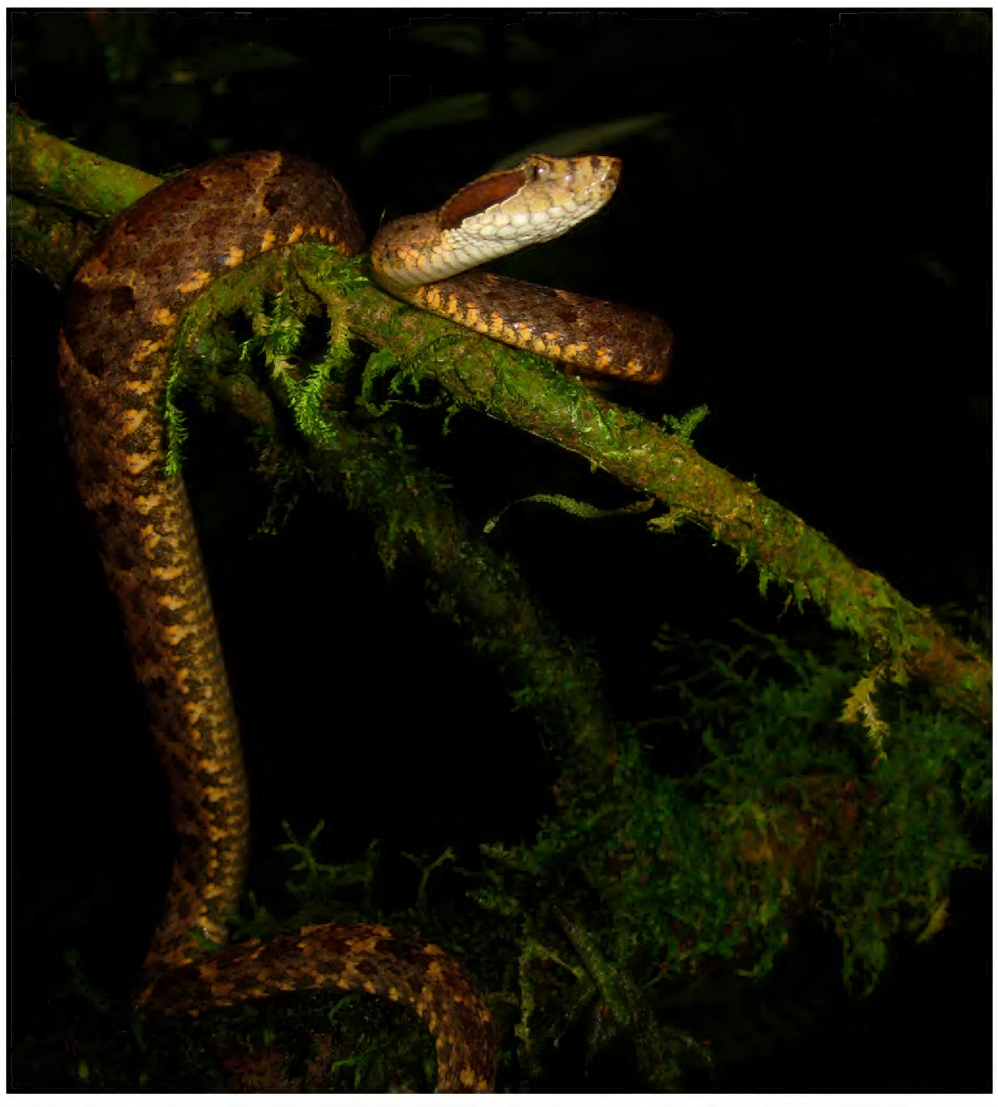

Figure 5. *Bothrops venezuelensis* (MPM P765). Found at Santa María, Boyacá. Photograph taken by DG.

Acknowledgments: We thank Dr Enrique Lamarca and Dr. Wolfgang Wüster for the species confirmation. Also we thank Dr. Cameron Siler and Dr. Santiago Madriñan who reviewed our manuscript. Dr. Robert Henderson at MPM for permitting us depositing voucher images of the specimens, Biologists Mateo Fernandez Lucero for contributing with a collected voucher specimen, Sebastian Gonzales for his help with GIS and Professor Pedro Rodriguez at Museo de Historia Natural José Celestino Mutis, Universidad de Pamplona, for his collaboration with the resesarch held in Norte de Santander.

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Received: March 2011
Accepted: March 2012
Published online: May 2012
Editorial responsibility: Cameron Siler